



1. Application details

1.1. Permit application details

Permit application No.: 614/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Newcrest Mining Limited

1.3. Property details

Property: E45/2441
E45/2440
Local Government Area: Shire Of East Pilbara
Colloquial name: Great Sandy Desert - E45/2441 E45/2440

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
22.3		Mechanical Removal	Mineral Exploration

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
Beard Vegetation Association 713 - Mosaic: Hummock grasslands, open low tree steppe; bloodwood (<i>Eucalyptus dichromophloia</i>) over soft spinifex, soft spinifex / Hummock grasslands, open low tree steppe; desert walnut over soft spinifex between sandridges (Hopkins et al, 2001).	The vegetation within the application area has not been visibly affected by grazing or fire regimes. The dune tops have sparse vegetation cover mainly of low lying grasses. The swales have more dense vegetation cover with taller grasses and few low trees. There is noticeably more exposed soil on the dune tops than the swales.	Pristine: No obvious signs of disturbance (Keighery 1994)	The description of the vegetation under application was obtained from site photos taken by Newcrest Mining Limited during a helicopter reconnaissance of the area in 2003 (DoE Ref: TRIM KNI1031, KNI1032, KNI1033, KNI1034, KNI1035).

3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments **Proposal is not likely to be at variance to this Principle**
The Environmental Protection Authority (1993) classified the Percival Lakes / Great Sandy Desert area within the System 12 subarea of the Red Book classification system. This classification indicates the EPA considered the area to be a good representative section of the central Great Sandy Desert. Given this classification, and that it does not appear to have been influenced by human activities or animal grazing, the application area is likely to have a high biological diversity. However, it is not likely that the proposed discontinuous clearing of 22.3 hectares will significantly reduce this level of biological diversity.

Methodology Site photos;
Environmental Protection Authority (1993);
GIS Database:
-System 1 to 5 and 7 to 12 Areas - DEP 06/95

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments **Proposal is not likely to be at variance to this Principle**
Although the area to be cleared has not previously been disturbed, the proposal is 22.3ha of discontinuous clearing for exploration drill holes and associated pads and tracks. The drill pads will be separated by vegetation corridors at least 2km wide (Wilson A, pers comm. 2005) which will leave undisturbed and continuous corridors for fauna habitat and movement.

Methodology Wilson A (2005);
Permit application

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments Proposal is not likely to be at variance to this Principle

There are no known Declared Rare and Priority Species within the area proposed for clearing.

Methodology GIS Database: Declared Rare and Priority Flora List - CALM 13/08/04

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments Proposal is not likely to be at variance to this Principle

There are no known Threatened Ecological Communities within the area proposed for clearing.

Methodology GIS Database: Threatened Ecological Communities - CALM 15/07/03

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments Proposal is not likely to be at variance to this Principle

The State Government is committed to the National Objectives and Targets for Biodiversity Conservation which includes a target that prevents clearance of ecological communities with an extent below 30% of that present pre-European settlement (Department of Natural Resources and Environment, 2002).

	Pre-European area (ha) *	Current extent (ha) *	Remaining %*	Conservation Status**	% in reserves/CALM-managed land
IBRA Bioregion - Great Sandy Desert	29,584,681	29,584,681	~100%	Least concern	9.3
Shire of East Pilbara	No information available				
Beard vegetation association - 713	3,770,062	3,770,062	~100%	Least concern	0.2

* Shepherd et al. (2001)

** Department of Natural Resources and Environment (2002)

Vegetation complexes within this application are above 30% representation. The vegetation at this site is a component of Beard Vegetation Association 713 (Hopkins et al, 2001), of which there is ~100% of the pre-European extent remaining (Shepherd et al, 2001). This vegetation type is therefore of 'least concern' for biodiversity conservation (Department of Natural Resources and Environment, 2002). Further, Newcrest Mining Limited (2000) will consider routes for their exploration tracks that minimise vegetation clearing by utilising existing tracks and naturally sparse areas.

Methodology Newcrest Mining Limited (2000);
Department of Natural Resources and Environment (2002);
Hopkins et al (2001);
Shepherd et al (2001)

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments Proposal is not likely to be at variance to this Principle

The area under application does not contain wetlands or watercourses. The RAMSAR wetland of Eighty Mile Beach is approximately 12km north of the proposal site, and the ANCA wetland Mandora Salt Marsh is approximately 17km north, both of which are located within the Radi Hills and Samphire Marsh EPA classification area (Burbidge et al, 1991). CALM (2005) raised concerns for the Mandora Salt Marsh as it is a Palaeo-drainage system extending from the eastern Kimberley, through Lake Gregory to Eighty Mile Beach. The springs support interesting and unusual plant assemblages, and very little has been published to assist in assessing the impact of the proposal on the hydrology and water quality of the Mandora Marsh, the waterbirds that use it and therefore the values of the wetland system (CALM, 2005). Providing the proponents demonstrate that the clearing will not impact on the hydrology to the level that the chemical/biological values of the wetland system will be degraded, then the proposal is not likely to be at variance to this Principle (CALM, 2005).

The distance between the proposed clearing and the wetlands, the discontinuous nature of the clearing and the small areas to be cleared, is not likely to affect these systems. Newcrest Mining Limited (2000) guidelines specify that the drill holes associated with the proposed exploration works will be capped to prevent groundwater loss and no additives or fluids are used in the process that could potentially pollute the groundwater. Groundwater is not extracted in the drilling process, so water table levels will not be lowered. Therefore the RAMSAR & ANCA wetlands will not be adversely affected by either the clearing or the exploration works.

Methodology CALM (2005);
Newcrest Mining Limited (2000);
Burbidge et al (1991);
GIS Database:
-Hydrology, linear - DOE 1/2/04;
-RAMSAR, Wetlands - CALM 21/10/02;
-ANCA Wetlands - CALM 08/01

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments **Proposal is not likely to be at variance to this Principle**

The methods of clearing are proposed to be raised blade and lowered blade. Raised blade methods ensure equipment blades are above ground level, so minimise soil displacement and erosion potential. This type of clearing is preferred for access tracks as it leaves soil and root systems intact (Newcrest Mining Limited, 2000) and minimises erosion potential. Newcrest Mining Limited (2000) will minimise vegetation clearing by utilising existing tracks and naturally sparse areas to ensure land degradation is further reduced.

Lowered blade methods present a higher potential for soil displacement. However, this type of clearing will only be used for drill pad sites where management practices will ensure land degradation is minimised. Such practices will include the establishment of proper drainage systems, minimising vehicle movement when tracks are wet and regularly maintaining cleared areas to prevent erosion (Newcrest Mining Limited, 2000). With these practices in place, the proposed clearing is not likely to be at variance to this principle.

Methodology Permit application;
Newcrest Mining Limited (2000)

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments **Proposal is not likely to be at variance to this Principle**

As a result of surveys in the 1970's and 1980's, the Environmental Protection Authority (1993) recommended the Percival Lakes / Great Sandy Desert System 12 area undergo further biological examination to determine areas for classification as conservation reserves. Half of the application area falls within this proposed classification area. From this, three Nature Reserves were identified, one of which is Anketell Ridge Nature Reserve (Environmental Protection Authority, 1993). No specific data was available to determine the specific boundaries of this reserve, however it was determined to be located to the south east of the proposal area. CALM (2005) did not express concern with the clearing being in close proximity to the Anketell Ridge Nature Reserve. The nature of the clearing will leave undisturbed and continuous corridors for fauna habitat and movement, therefore the proposed clearing is not likely to threaten the values of the buffer system it provides to the Nature Reserve.

Methodology Environmental Protection Authority (1993);
CALM (2005);
GIS Database:
-System 1 to 5 and 7 to 12 Areas - DEP 06/95;
-CALM Managed Lands and Waters - 1/06/04

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments **Proposal is not likely to be at variance to this Principle**

The area under application is not in a Public Drinking Water Source Area, therefore the quality of the groundwater and surface water reserves do not require protection for human consumption. Beards description of the vegetation of the area is grasslands with an open low tree steppe (Hopkins et al, 2001), which is highlighted in site photos of the area. CALM (2005) raised concerns for the Mandora Salt Marsh as it is a Palaeo-drainage system and that very little has been published to assist in assessing the impact of the proposal on the hydrology and water quality of the Mandora Marsh, the waterbirds that use it and therefore the values of the wetland system. However, the removal of this vegetation is not likely to result in increased groundwater levels, as this is shallow rooted vegetation and is not likely to have a significant role in keeping groundwater levels stable. Also, the distance between the proposed clearing and the wetlands, and the small, discontinuous nature of the clearing is unlikely to affect these systems.

Additionally, Newcrest Mining Limited (2000) guidelines specify that the drill holes associated with the proposed exploration works will be capped to prevent groundwater loss and no additives or fluids are used in the process that could potentially pollute the groundwater. Groundwater is not extracted in the drilling process, so water table levels will not be lowered (Newcrest Mining Limited, 2000).

Methodology Site Photos;
Hopkins et al (2001);
CALM (2005);
Newcrest Mining Limited (2000);
GIS Database:
-Public Drinking Water Source Areas (PDWSA's) - DOE 29/11/04;
-ANCA Wetlands - CALM 08/01
-RAMSAR Wetlands - CALM 21/10/02

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments **Proposal is not likely to be at variance to this Principle**
Flooding can occur seasonally over the December to March period, where flood height and duration are variable and can be extreme. The clearing of 22.3ha of vegetation is unlikely to increase these flood factors.

Methodology GIS Database: Rainfall, Mean Annual - BOM 30/09/01

Planning instrument, Native Title, Previous EPA decision or other matter.

Comments
Access tracks to the areas applied to clear will be through pending Miscellaneous Licence L45/144 to the Kidson Track, approximately 20km to the south. A Native Vegetation Clearing Permit will be lodged with the Department of Industry and Resources in due course for a clearing permit for these access tracks.

The Department of Industry and Resources, in granting exploration licences E45/2440 and E45/2441, placed conditions on the tenements excluding all activities from the areas designated EPA12.3 and PNR215 without prior written approval of the State Mining Engineer, due to the determination such areas were considered Environmentally Sensitive Areas. Consultation with CALM (2005) and a desktop survey determined the area designated EPA12.3 is likely to be Anketell Ridge Nature Reserve and PNR215 to be RAMSAR wetland Eighty Mile Beach and ANCA wetland Mandora Salt Marsh. The proposed clearing area is not within the Eighty Mile Beach and Mandora Salt Marsh reserves. Specific boundary data was not available for the Anketell Ridge Nature Reserve, therefore the Department of Environment has no data to base a clearing restriction on this permit. However, the proponent is bound by the conditions set by the Department of Industry and Resources which will exclude clearing in these reserve areas under the tenement agreement.

The Department of Conservation and Land Management (2005) commented "providing that the proponent demonstrates that the clearing will not impact on the hydrology to the level that the chemical/biological values of the wetland system will be degraded, then the proposal is not likely to be at variance to Principle H". It has been demonstrated in this assessment that the clearing will not impact on the hydrology of the Mandora Salt Marsh, therefore the Assessing Officer recommends the clearing permit be granted. The exploration activity of RC drilling will go to a depth of ~300m passing through the unconfined aquifer, which has a maximum depth of 82m, and entering the confined aquifer of the Canning-Wallal system. It is possible this activity may affect the Palaeo-drainage system of the Mandora Salt Marsh. As the drainage system is affected by the proposed activity, not the clearing, it is outside the jurisdiction of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. Due to this, the Assessing Officer recommends that the proponent investigate the effects the proposed activity will have on the Mandora Salt Marsh, and that the Department of Industry and Resources and the proponent consult with the Department of Conservation and Land Management to prepare an environmental management plan for the proposal.

No objections have been received in relation to the clearing of native vegetation in the area under application.

There is one Native Title Claim over the area under application, by the Nyangumarta people. The permit applicant holds Exploration Licences E45/2440 and E45/2441 over this area. As the purpose of the clearing is for an activity authorised under Exploration Licence E45/2440 and E45/2441, the granting of the clearing permit would not constitute a future act under the *Native Title Act 1993*.

This application is not at variance to the Environmental Protection Authority's advice given under s48 (CRN 131091), which relates to the Shire of East Pilbara Town Planning Scheme 2. The advice does indicate that the Planning Scheme provides a significant opportunity to recognise the conservation proposals made in the Environmental Protection Authority (1993) System 12 Red Book. It also advises that the Shire should, as appropriate, acquire environmental survey data to properly take into account protection of the environment and prevention of pollution for planning decisions and the preparation of local plans. The Assessing Officer recommends that Newcrest Mining Limited provide the Shire of East Pilbara with the results of surveys conducted during the course of the proposed activity of exploration works.

The intended land use of exploration works is not a prescribed activity under the *Environmental Protection Act 1986*, therefore neither a Works Approval nor an Environmental Protection licence will be required.

The proponent has advised that water will not be required for the proposed activity of exploration works, therefore a water licence under the *Rights in Water and Irrigation Act 1914* will not be required.

Methodology GIS Database:
 -Native Title Claims - DLI 19/12/04
 -Environmental Impact Assessments, Polygon Features - DOE 29/11/04
 Environmental Protection Authority (1998) CRN 131091
 CALM (2005)

4. Assessor's recommendations

Purpose	Method	Applied area (ha)/ trees	Decision	Comment / recommendation
Mineral Exploration	Mechanical Removal	22.3	Grant	Assessable criteria have been addressed and no objections were raised. The Assessing Officer therefore recommends that the permit should be granted.

5. References

- Burbidge A, McKenzie NL, Kenneally KF. (1991) Nature Conservation Reserves in the Kimberley Western Australia. Prepared for the Department of Conservation and Land Management, Western Australia.
- CALM Land clearing proposal advice. Advice to A/Director General, Department of Environment (DoE). Department of Conservation and Land Management, Western Australia. DoE Reference: TRIM KNI1093
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales ; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- Environmental Protection Authority (1993) Red Book: Status Report. Implementation of Conservation Reserves for Western Australia as Recommended by the Environmental Protection Authority. Report 15.
- Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
- Keighery, BJ (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Newcrest Mining Limited (2000) Environmental Guidelines for Mineral Exploration. Unpublished Document. DoE Reference: TRIM KNI1030
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Wilson A (2005) pers comm. DoE Reference: TRIM KNI1028

6. Glossary

Term	Meaning
CALM	Department of Conservation and Land Management
DAWA	Department of Agriculture
DEP	Department of Environmental Protection (now DoE)
DoE	Department of Environment
DoIR	Department of Industry and Resources
DRF	Declared Rare Flora
EPP	Environmental Protection Policy
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
TEC	Threatened Ecological Community
WRC	Water and Rivers Commission (now DoE)